CHAPTER IV

Command and Control/Communications

One of the most significant problems in the oil cleanup operations was confusion in the command and control structure. The problem was compounded by the remoteness, the difficulty of communicating between all the key players, the mixture of the civilian and military worlds and the Coast Guard, and the high level of national attention. The confusion sometimes hampered operations and left the public with the impression that nothing was being done and no one was in charge.

The Coast Guard altered its traditional response structure in the Alaska operation because of the immense size of the spill and the intense presidential and media interest. Normally the local on-scene coordinator assumed responsibility for the cleanup. In this instance, however, the predesignated on-scene coordinator, the commanding officer at the Marine Safety Office in Valdez, was quickly overwhelmed by the scope of the spill and the cleanup effort and the high-level interest. The on-scene coordinator at the time, Steve McCall, was a commander in the Coast Guard, and officials with higher rank outside the Coast Guard were reluctant to deal with him. Moreover, McCall had to devote much attention to public and media concerns about the potential environmental and economic impacts of the spill. To alleviate some of the pressure on the on-scene coordinator, Vice Admiral Clyde E. Robbins, Commander of the Pacific Area, directed that the Commander of the Coast Guard's 17th District in Alaska, Rear Admiral Edward Nelson, take charge of the operations. Robbins and Nelson were in daily communication from 24 March until 7 April. Robbins traveled to Alaska once during this period, but he was not directly responsible for the day-to-day operations.

At one point President Bush directed Commandant Yost to take charge in Alaska personally, but Yost did not believe

this would benefit either the Coast Guard or its constituencies. He suggested that Admiral Robbins, who had previous oil spill experience, go to Alaska instead. After a meeting at the White House on 7 April, Admiral Yost directed Robbins to go to Alaska, and two days later Robbins flew to Valdez with directions from the White House to get the spill off the front pages of newspapers. After working with Admiral Nelson for a week, Robbins officially assumed responsibility as the federal on-scene coordinator on 16 April and would remain in that post until 30 September. Nelson returned to Juneau to resume command of the 17th Coast Guard District.[1]

The function of command and control in Alaska was made more difficult for Robbins because he had to assume a dual role. He not only had to direct the day-to-day operations of the cleanup, but he also had to handle a steady stream of visiting dignitaries, representatives from the media, and representatives from federal agencies, some of whom arrived uninvited. Political posturing and publicity seeking at times seriously affected operational decisions.[2]

Because of the large number of state and federal agencies involved and the complexities of the cleanup problem, the FOSC had difficulty creating an organizational structure for command and control. "Putting that structure together so that you had a nice, clean flow in determining how a beach or shore area was to be cleaned," Robbins observed, "is a monumental task for people who have not been organized like that before." The Coast Guard and Defense Department routinely wrote operations orders and followed them, but civilian agencies had their own agendas and procedures. Robbins' greatest challenge was to create an organization that worked smoothly and then insure that everyone understood how that organization worked. The tendency to rotate people every thirty days or so made it difficult to keep people adequately trained and informed.[3]

The National Contingency Plan failed to give the federal on-scene coordinator adequate authority to direct the cleanup operation. Robbins was frustrated by the lack of authority and believed that it impeded operations. No matter what the public might have perceived or wanted, the FOSC was a "coordinator," not a "commander." He could suggest that

Exxon do something, but could not coerce Exxon. Exxon was, after all, paying the bill. If Exxon refused a request, the only enforcement mechanism that the FOSC had was to "federalize" the cleanup.

The FOSC had to coordinate with Exxon and with many federal and state agencies and create a consensus rather than dictate to them, which was a difficult and time-consuming process. Often other agencies did not fully understand how the National Contingency Plan operated or the FOSC's role, so Robbins had to educate them. For example, a controversy developed over the use of incinerators. The Environmental Protection Agency labeled the waste from the spill a hazardous substance and it had to be removed, but it could not simply be dumped anywhere. It had to be burned or go into a hazardous waste landfill. Operators soon decided that the best way to dispose of the waste was to burn it, and Exxon spent $5 million to bring in two incinerators. However, since EPA had the final authority on incineration, Robbins could not order Exxon to burn the contaminated materials.[4]

In another instance, Exxon and USCG officials were concerned about transporting workers to a remote island and back to their hotel boats in bad weather. At Robbins' request, Exxon purchased tents for a campsite on the beach. At that point, Occupational Safety and Health Administration (OSHA) officials complained that the tents violated regulations because they had no windows. Robbins pressed the issue with the OSHA commissioner in Juneau, threatening to go to the news media, and the commissioner relented. Yet so much time had passed that the tents were never used.

In any kind of operation, Robbins observed, there are two types of people — the operator in the field who is making the decisions and trying to get the job done and the bureaucrat back in the office. The bureaucrat wants to make "no risk" decisions, and the operator knows that there is no such thing as a "no risk" decision if he is going to get the job done. The bureaucrat does not have to make the fast on-the-spot decisions, and yet he feels responsible and refuses to delegate that authority to the operator in the field. Robbins found some agencies to be "very bureaucratic" and unaccustomed to making quick risk decisions on a daily basis.[5]

Robbins often had to delay operations while he waited for decisions to go up through agency channels. He tried to get agencies to delegate authority to their local representatives, but officials such as the Director of Alaska's Department of Environmental Conservation (DEC) did not do this well.[6] The DEC on scene representative felt that he had to refer most of his decisions to his superiors and never had any real control over what would come out of the decision-making process. Meanwhile, the higher level official was being pressed by many political interests.

Robbins decided to involve local communities in the decision-making process. Rather than making the decision for local communities, he preferred to give them time to study the situation and make their own recommendations. Once they became part of the decision-making process, they could see some of the problems and feel some of the frustration. If they could not make a decision by the deadline that Robbins set, then he acted.[7]

Another aspect of the command and control problem involved the relationship between the Coast Guard and the Defense Department. The President directed DOD to "assist" DOT but there was confusion over what this meant. Initially some Coast Guard officials had the mistaken impression that DOD was coming in to take over and that they would become a "back seat player." There were heated discussions between General Smith and Admiral Yost. Yost argued that DOD resources should be placed under the USCG, but Smith refused to place military assets under an outside organization. "You give the military the mission," Smith explained, "put somebody in charge up there and give that person the mission to work directly with the Coast Guard. But you don't pull units out and assign them to another organization that doesn't normally command DOD assets." When Yost realized that DOD resources would not come under the USCG, he relented and an "efficient" relationship evolved.[8] However, some confusion remained. General McInerney was supposed to provide support to the Coast Guard, but what happened if the Coast Guard did not ask for the support?

Despite the occasional confusion between the Defense Department and the Coast Guard, Admiral Robbins had experience working with DOD in exercises and was comfortable

with the military structure and discipline. As soon as Army officers understood the organizational structure, Robbins asserted, they were very cooperative. General McInerney told his officers that if Robbins requested something, he was the only person who could turn Robbins down. McInerney never turned Robbins down.[9]

Command and control and communications between the FOSC and JTF worked well. Using the telefax and phone, Robbins received good, timely information. To promote coordination and communication, he maintained a watch staff of four Coast Guard officers at Elmendorf AFB. A Coast Guard liaison to the JTF, Commander Robert Luchen, provided Admiral Robbins with current information on the status of FOSC requests for equipment. Colonel Wilson in turn provided logistics support to the FOSC to facilitate the movement of cargo. These logistics people arranged flights from all over the world. Wilson also placed JTF representatives on site at the combined FOSC/Exxon headquarters in Valdez so that they could talk directly about capabilities and clarify requests.[10]

The FOSC operations center submitted requests to General McInerney in writing. The JTF validated them and occasionally went back to the FOSC to insure that they were exactly what he wanted. The JTF preferred that the FOSC tell the JTF his requirements rather than ask for specific resources. If General McInerney agreed that the request was valid and involved resources under his control, he sent it down the line, or if the request involved resources outside his control, such as a berthing ship or dredges, he sent it on to DOMS for action. McInerney's staff also dealt directly with Robbins' staff because many requirements did not have to be handled at the three star level.

Although the relationship between the FOSC and the JTF was generally good, Robbins and McInerney did not always agree on the need for particular resources. For example, when McInerney requested some H-60 helicopters, Robbins told him that DOD would have to pay for them. Normally Robbins directed Exxon to acquire certain equipment, and Exxon contracted with a company or organization to get it. In other instances, Exxon requested the FOSC to get particular equipment (i.e., Air Force decontamination units). In both instances,

Exxon was obligated to pay for the assets. If DOD or any other organization provided something that Robbins had not requested or that Exxon had not requested from Robbins, then Robbins could not approve the request and submit it to Exxon. If DOD or another agency sent a bill for Robbins to forward to Exxon, and if the bill included something that Robbins had not asked for but he honestly believed was needed, then he directed Exxon to pay. But if organizations provided items that Robbins specifically told them were not needed, they were on their own. McInerney agreed to pay for the H-60s because he believed they were important for safety reasons.[11]

Under the chain of command, decisions and directives went from the FOSC to the JTF to DOMS, and DOMS was the action agency that had the authority to task any of the services for resources and to coordinate DOD operations. Technically, General Smith was not in the direct chain of command. He was staff for the Secretary of the Army, so in effect General McInerney went to the Secretary of the Army with his requests. Smith functioned as a conduit, packaging the request and sending it to the Secretary for decision. Generals Smith and McInerney communicated often, sometimes three or four times a day.

General Smith had clearly defined authority and with his ready access to Secretary Cheney could get quick decisions. As the action agent for the Secretary of the Army, he had the authority to task all the major commands and services directly. According to Smith, it was "a very efficient organization because the responsibility lines are very clear. I don't have to go around and discuss whether I have the authority to do this." Smith had the direct authority as long as the request came to the Secretary of the Army staff.

Early in the crisis, Smith conducted a briefing in the Army Operations Center in the Pentagon for all the leadership and all the services, and the Secretary of Defense and his staff explained what DOMS was doing. After that DOMS distributed daily information memorandums to other agencies and the White House.[12]

Confusion existed not only in the command relationship between DOD and the Coast Guard, but within the Corps of Engineers as well. General Stevens was named AK-JTF

Engineer to provide Engineer advice and support to General McInerney and to take his directions from the AK-JTF. Stevens in turn designated Alaska District Engineer Colonel Kakel to fill this role, and Kakel personally attended the Joint Task Force meetings every morning for two months. Operating under a JTF in a peacetime emergency operation was unusual for the Corps. Ordinarily in an emergency, such as a flood, the Corps has authority to mobilize and act on its own. The Alaska operations were more like a wartime organization with Kakel answering to the commander of a special joint task force.

The official chain of command then went from the FOSC to AK-JTF to DOMS to Alaska District. If McInerney asked Kakel for a resource that he did not have (e.g. laboratory assistance or dredges), Kakel forwarded the request to North Pacific Division and the Division either furnished it or sent the request on to HQUSACE. Colonel Kakel and his staff believed their mission was to assist in the cleanup as much as possible. Kakel's directive from headquarters was to get in the game and make Alaska District "players." Officials in headquarters sometimes pressured District staff to do things that they might not have done on their own because they were sensitive to angering the people they worked with in the field. Kakel tried to be as diplomatic as possible, skillfully balancing the pressure he and his staff were under to make things happen with the need to maintain the cooperation of the Coast Guard.[13]

In effect, the Corps had two lines of command and control, which at times caused conflicts. General Kelly, as Director of Civil Works, supported the AK-JTF commander and, as part of the DOMS task force, advised the Secretary of the Army. Colonel Kakel had two bosses: AK-JTF (McInerney) and HQUSACE (Kelly). On some issues, such as shoreline cleanup, Kakel gave General McInerney a different opinion than the one Kelly expressed to DOMS. As JTF Engineer, Kakel might suggest to McInerney that a particular resource was not needed, and McInerney would report that to DOMS. The DOMS task force, on the other hand, concerned with showing the flag, might disagree over the assessment. Kakel was now in conflict with Kelly, who represented the Corps on the DOMS task force and viewed the matter from a DOMS

Corps of Engineers officers Brigadier General Patrick Stevens (left), Brigadier General Patrick Kelly (center), and Colonel William Kakel (right).

perspective. General Stevens sometimes found himself caught in the middle. General Kelly was constantly concerned that the Corps be prepared to assume a larger role in the cleanup in case Exxon's response was inadequate. He appreciated Kakel's difficulties and later observed that Colonel Kakel handled the awkward situation "superbly."[14]

Although Kakel and his staff officially worked for the JTF, they continued to receive taskings from North Pacific Division and Corps headquarters. General Kelly requested information from North Pacific Division and Alaska District in order to fulfill his staff role for the Secretary of the Army. Field personnel, particularly the staff of Alaska District's EOC, were confused about where the taskings were coming from and had difficulty establishing clear priorities.[15]

Confusion also characterized the command and control structure for directing the dredges in the actual oil recovery operations. Dredge crews had difficulty determining who was in charge, for whom they worked, and who controlled their efforts. Normally, the dredges belonged to Portland District for administrative and logistical purposes but were under the

operational control of the Civil Works Directorate, which determined their priorities and programs. When the Director of Civil Works sends dredges to a District, their operations are the District's responsibility. Thus, when they reached Alaska they came under the operational control of Colonel Kakel. Yet some confusion existed initially about who controlled the dredges. Colonel Kakel correctly maintained that the dredges came under his control when they entered Alaskan waters, but Portland District Engineer Colonel Cowan took a different view. When Captain Brice arrived in Alaska, he was unsure whether the dredges worked for Alaska District, Portland District, or the Coast Guard.

Colonel Kakel insisted that an officer be on board each vessel to serve as liaison between the dredge and the numerous organizations involved and to relieve the crew of reporting requirements and other details so it could concentrate solely on the operation of the dredge.[16]

Exxon and the Coast Guard placed representatives on board the dredges, and the dredge crews took orders from both. Much seemed to depend on the strength of the personalities of these representatives and the Corps personnel. Some Coast Guard officials were aggressive about making decisions and taking action; others were more passive. Sometimes the Exxon representative gave the crew direction; sometimes the Coast Guard representative did; and sometimes neither did. Coast Guard and Exxon representatives and Corps personnel usually decided together what to do, but the chain of command was never refined. It was never clear who ran the dredges.

In one instance a dredge was near a bay on its way to Seward. Enroute there were several small bays where the oil had been collected in booms. The Coast Guard personnel on site told the dredge to pick up the oil, but Coast Guard officials in Anchorage became upset when they found out. The confusion was compounded initially by the fact that two Coast Guard Marine Safety Offices (Anchorage and Valdez) gave directions, but on 17 April, the day after he took charge, Robbins changed the organization, placing all the cleanup activities directly under his control in Valdez.

Much of the time the dredges functioned on their own as independent task groups, organizing fishing vessels to pull

boom, working with aircraft to spot oil, and sending out the Corps' launch to track oil. When neither Exxon nor Coast Guard representatives were on board, the dredges made their own decisions. Captain Brice and others on the dredges quickly created a role for themselves by providing command and control for fishing vessels in the area where the dredges were working. Fishing vessels gravitated to the dredges not only for the hot showers and meals but for direction. The fishing vessels were eager to stay with the dredges when the dredges were successfully locating and recovering oil.[17]

Robbins conceded that at times the great distances hampered command and control. Having the dredges direct their own operations, he said, "is probably the best way to do it." His first concern was that the dredges be in the oil as much as possible. Robbins recommended that in the future operators put a landing pad on the dredges, assign them a small helicopter, and equip them with boom and skimmers so that they can conduct their own operations. He maintained that operators in Valdez would not be as effective as on-site crews in running oil removal.[18]

Dredge crews found that Exxon and the Coast Guard were not organized well enough for such a large operation. Exxon had people in charge who did not know how to handle fishing vessels and did not have a readily available communications system. When the Corps arrived, operators were relying on Marine Band radio to communicate with the fishing vessels. Initially, the cleanup operation was very disorganized with some boats not doing anything and some boats going to the wrong locations.

The dredge crews complained about delays and imprecise instructions. The dredges were not used as constructively as possible. In some instances the crew would hurry to some location fifteen miles away only to find the oil gone. Because of the urgency, the emphasis was on getting the dredges to Alaska, not on establishing effective command and control. In future emergencies, Captain Brice cautioned, the Corps must clarify the command and control structure early on and establish who directs the dredges.[19]

While the dredge crews struggled to sort out the confusion, command and control problems surfaced within HQUSACE. Under current standard operating procedures, when the

Emergency Operations Center in HQUSACE is activated, it becomes a staff level organization and receives the authority to task other functional elements in headquarters without going through the established chain of command. The EOC becomes the conduit for all taskings and information to other elements within the command. A crisis management team with representatives from various functional elements in headquarters is activated to handle the requests for information and the taskings.

During the oil spill response, however, the EOC did not operate according to standard procedure. Officials established a special task force to develop a plan for a DOD response to the spill, but they did not activate the crisis management team. General Kelly and John Elmore issued requests for information and directives for action directly to other functional elements. Responses sometimes came back to the EOC and sometimes went directly to Kelly or Elmore. At times Elmore personally ran the EOC operations. He and General Kelly attended high-level interagency meetings, and sometimes neglected to provide adequate feedback on what transpired at those meetings. Thus, Robert Fletcher, Chief of the Readiness Branch, who was responsible for the day-to-day operations of the EOC, had difficulty executing his traditional responsibility as the single point of contact for headquarters concerning emergency operations.[20]

Readiness Branch personnel usually represent the Corps at National Response Team (NRT) meetings, but the Corps had no formal representative on the NRT at the Coast Guard Response Center. Fletcher, however, sent one of his staff, a Coast Guard reserve officer, Michael Hartley, to function as an unofficial liaison in the Coast Guard Command Center.

Kelly and Elmore might well have been so consumed by the intensity of the operation that they overlooked the emergency management staff's need for more information. They might also have felt that the Readiness Branch would only respond within its traditional scope, within existing plans and procedures, when new initiatives were needed. Centralized management of the operation may have been necessary in part because of the heavy media attention. Most agencies were directing the effort from the national level. Fletcher, however, recommended that in the future the senior

officials either take along operational people or provide better feedback on what transpired at their interagency meetings.[21]

In addition to the confusion in command and control at almost every level of the cleanup operation, there was the problem of providing and maintaining adequate communications in a remote, harsh environment. Radio operators had to work through repeaters to relay information and had to place retransmittal stations on top of mountains to communicate from Valdez out into Prince William Sound or into the Gulf of Alaska. Operators learned that they had to be flexible and willing to adapt the technology at hand and use every resource available.[22]

To improve communications, Exxon, state, and federal officials adopted a computer system designed to help wartime military commanders deploy troops, aircraft, and armor in battle. The Alaskan Command and Control Military Automated Network (ACCMAN), which was based on 120 Apple MacIntosh II computers installed several months before the spill, served as the primary means of coordinating the military's response to the oil spill. As DOD units became increasingly involved in assisting in the cleanup, the Alaska Air Command (AAC) adapted its ACCMAN system to the oil spill and developed the Oil Spill Computer Aided Response program (OSCAR) for channeling information about the cleanup effort.

The AAC installed OSCAR in the Exxon headquarters in Valdez and set up a central command and control facility at Elmendorf Air Force Base. With the graphics capabilities of the MacIntosh computers interconnected by the OSCAR network, DOD could send information almost instantly. Military and Exxon computer programmers entered the location of environmentally sensitive areas, bird rookeries, hatcheries, monitoring stations, and oiled beaches, as well as statistics which showed the number of barrels still at sea and the number recovered. Next they put in the location of the skimmers, fishing vessels, and cleanup crews.

The Alaska Air Command used the OSCAR system to give morning briefings to General McInerney. McInerney and senior staff sat in a darkened secure room, the "command bridge," around a huge computer screen while an operator projected information from the system on a screen: assets

deployed, weather, daily oil recovery. The AAC relayed this data to a MacIntosh in the Pentagon that served as a focal point for coordinating support from Washington.

The *Anchorage Daily News* called the system "one of the more tangible results of President Bush's decision to employ the military in the cleanup." Anyone from a crew member on a Coast Guard cutter in Prince William Sound to an Exxon official in Houston or a general in the Pentagon could use OSCAR to pull up the latest information on the location of the oil and the status of the cleanup. It provided timely information on oil spill activities and allowed operators to track the large number of vessels involved. The system gave USCG and Exxon operation centers current information (at two minute intervals) that included maps and graphic displays of affected areas, and locations of oil booms, cleaning crews, wildlife areas, and hatcheries. By late April over three hundred vessels were being tracked by OSCAR.[23]

Early in the response, Colonel Kakel discovered that the Alaska Air Command had three computer systems to coordinate the AK-JTF effort, two of them running only on an Apple MacIntosh. Kakel directed that the District link into the system, and the District installed a MacIntosh to communicate with the AK-JTF. The computer provided the District with access to JTF maps, chain of command charts, and weather reports.

Briefing slides generated at the JTF were hand-carried on a floppy disc to Alaska District where they were loaded on the MacIntosh and presented during the EOCs briefings. OSCAR provided mail, taskings, and daily log information. District staff could enter the coordinates of any location in Alaska into the computer and the computer would provide a full color map of the area. It could also display the area where the dredges were working and change the dredge location. OSCAR allowed the District to track all the vessels and determine where they were, what they were doing, and who they were working with.

HQUSACE EOC used a MacIntosh II and a 9600 modem to access OSCAR, so it could maintain current data on the oil spill in the form of data and graphics, an incident log, taskers, and maps which indicated the current location of the spill. An electronic mail feature allowed EOC to communicate with other OSCAR users.

Although the computer system provided a valuable communications link, it was only as accurate as the information it received. Bill Lamoreaux of the Alaska State Department of Environmental Conservation charged that in the first weeks Exxon officials in Valdez provided inaccurate information. They reported several skimmers working in Resurrection Bay, but when the department flew out, it could not find them.[24]

In addition to computers, decision makers relied on video teleconferences to improve communications. When General McInerney became the Defense Senior Representative, he quickly contracted with a local television station in Anchorage to get a direct line into his headquarters and tied it to the existing video teleconference facility in the Army Operations Center (AOC) at the Pentagon. On 14 April the link was complete, and in the first video teleconference General McInerney provided Secretary Marsh with his assessment of DOD support to the cleanup effort. This was the first time that Pentagon officials used video teleconference capability to coordinate an ongoing operation in the field.[25]

At critical stages in the cleanup operations, video teleconferences occurred once or twice a week. On a number of occasions when there was great political interest in a particular action or decision, General Smith set up video teleconferences between Secretary Marsh, Richard Breeden, senior Coast Guard representatives, and senior Transportation Department officials in the AOC and General McInerney and his staff in Alaska. At times the participants were limited to Marsh, Smith, and one or two others with McInerney on the other end, and they candidly discussed what they would recommend to Secretary Cheney. After a video teleconference, Marsh and Smith could walk down the hall and quickly lay out for Secretary Cheney the information they had just received from General McInerney. The capability simplified and accelerated the decision-making process.

In addition to expediting the decision-making process, Colonel Wilson observed that the video teleconferences greatly improved the quality of communication. Looking at someone rather than just hearing his voice gave participants a better feel for the person's credibility. Video teleconferencing was not a new technology but it had not been widely accepted

or widely used before the oil spill. Wilson believed the Alaska experience demonstrated how effective it could be in the decision-making process.[26]

Despite OSCAR and the teleconferences, the Corps of Engineers continued to face communications problems. General Stevens decided early that reporting would be done from Alaska District's EOC rather than North Pacific Division, with simultaneous reports going to the Division and headquarters. As the reports came in, District staff was supposed to send them to Portland and Washington via ONTYME, an electronic mail system, but sometimes they could not send information to the headquarters EOC on this system because no one there knew how to get the information off ONTYME. So the District EOC had to fax documents — a very time-consuming process. Alaska District's EOC was "severely overburdened" by the necessity to use different methods of communication to forward its pollution reports to headquarters, AK-JTF, the Division, and Seattle District.[27]

No one in headquarters or in Alaska District apparently considered whether every office on the distribution list actually needed copies of each of the six or seven reports generated each day. The EOC simply tried to get out as much information as it could. Initially, it took Regional Response Team reports and others, digested them, and incorporated them in its own Pollution Report — a cumbersome undertaking. Later the EOC simply attached the entire RRT report to its pollution report. Offices interested in this report could have gotten it quickly on computer. One District official observed that there were too many reports and misinformation was passed from one report to another. There were RRT reports, Exxon reports, Alaska District pollution reports, Coast Guard reports, JTF reports, EOC situation reports, and all these reports came from the same basic sources. If the District did not have anything to write beyond what it had collected from the other reports, Kirk Shadrick concluded, then it should not write anything.[28]

In addition to keeping NPD and HQUSACE informed, NPA also had to maintain communications with the dredges. When the spill occurred, Alaska District's information management personnel had already begun installing a 1,000-watt, high frequency, single side band (SSB) radio transmitter in

the EOC. A radio control unit installed in the EOC and a transmitter installed in a converted semi-trailer parked in the District's storage yard interfaced with a computer. Signals from the EOC bounced off the ionosphere to get to Prince William Sound. Because of solar activity there were several times when the District could not communicate with the dredges. Communication was difficult when weather was poor or when dredges were in sheltered coves.

The *Yaquina* was equipped with SSB, UHF, VHF, and bridge-to-bridge communication. The *Essayons* had one SSB radio on board that worked. When Coast Guard and Exxon representatives were on board, eleven reports had to be transmitted (four Corps, four Coast Guard, and three Exxon). The radio was also used for contact and coordination with fishing boats.

Initially Alaska District had four radio checks a day for the dredges, and later two. The dredges called up at the designated times and provided the information the Coast Guard required, such as weather, location, how much fuel they had used, future plans, and master's concerns. The District EOC sent the dredge reports directly to the Coast Guard's Anchorage and Valdez Marine Safety Offices. Later it transmitted the information directly to the JTF through OSCAR.[29]

Command and control and communication remained serious problems throughout the operation. The FOSC never had adequate authority to direct the response. There were too many agencies involved in the decision-making process and too many competing interests. In addition, there was confusion in the Coast Guard's relationship with the Defense Department and within the Defense Department itself, which filtered down to the operators in the field. Using new technology, officials improved communications, but the command and control problems persisted.